

CLAIMS

1. A composition for inducing specific B cell anergy to an immunogen implicated in an antibody-mediated pathology comprising a conjugate of a nonimmunogenic valency platform molecule and at least one analog of the immunogen wherein (a) the analog binds specifically to B cells to which the immunogen binds specifically and (b) the conjugate lacks a T cell epitope.

2. The composition of claim 1 wherein the immunogen is an external immunogen.

3. The composition of claim 2 wherein the external immunogen is a biological drug, an allergen or a D immunogen associated with Rh hemolytic disease.

4. The composition of claim 1 wherein the immunogen is a self-immunogen.

5. The composition of claim 4 wherein the self immunogen is that associated with thyroiditis, diabetes, stroke, male infertility, myasthenia gravis, or rheumatic fever.

6. The composition of claim 1 wherein the immunogen and analog are of the same chemical class.

7. The composition of claim 6 wherein the immunogen and the analog are polypeptides.

8. The composition of claim 1 wherein the immunogen and the analog are of different chemical classes.

9. The composition of claim 1 wherein the valency platform molecule is a polymer.

10. The composition of claim 9 wherein the polymer is a copolymer of D-lysine and D-glutamic acid.

5 11. The composition of claim 9 wherein the polymer is polyethylene glycol.

12. The composition of claim 9 wherein the polymer is triethylene glycol.

10 13. The composition of claim 1 wherein the valency platform molecule has three to eight attachment sites.

15 14. A pharmaceutical composition for treating an antibody-mediated pathology comprising a therapeutically effective amount of the conjugate of claim 1 combined with a pharmaceutically acceptable carrier.

20 15. A method of inducing specific B cell anergy to an immunogen in an individual comprising administering to the individual an effective amount of the composition of claim 1.

25 16. A method of treating an individual for an antibody-mediated pathology in which undesired antibodies are produced in response to an immunogen comprising administering a therapeutically effective amount of the composition of claim 1 to the individual.

30 17. A method for making a conjugate useful for inducing specific B cell anergy to an immunogen implicated in an antibody-mediated pathology, the conjugate comprising a nonimmunogenic biologically stable valency platform molecule and an analog of the immunogen wherein (i) the analog binds specifically to B cells to which the immunogen binds specifically and (ii) the conjugate lacks a T cell epitope,
35 comprising the steps of:

(a) covalently bonding the analog of the immunogen lacking T cell epitopes to a nonimmunogenic valency platform molecule to form a conjugate; and

5 (b) separating the conjugate from the reaction mixture.

18. The method of claim 17 wherein the immunogen is an external immunogen.

10 19. The method of claim 18 wherein the external immunogen is a biological drug or an allergen.

20. The method of claim 17 wherein the immunogen is a self-immunogen.

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21. The method of claim 20 wherein the self-immunogen is that associated with thyroiditis, diabetes, stroke, male infertility, myasthenia gravis, rheumatic fever, or Rh hemolytic disease.

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22. The method of claim 17 wherein the immunogen and analog are of the same chemical class.

23. The method of claim 22 wherein the immunogen and
25 analog are polypeptides.

24. The method of claim 17 wherein the immunogen and analog are of different chemical classes.

30 25. The method of claim 17 wherein the polymer is a copolymer of d-lysine and D-glutamic acid.

26. The method of claim 17 wherein the polymer is a polyethylene glycol.

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27. A method for making a composition useful for inducing specific B cell anergy to an immunogen implicated in an antibody-mediated pathology, the composition comprising a pharmaceutically acceptable vehicle and a conjugate of a nonimmunogenic biologically stable valency platform molecule and an analog of the immunogen wherein (i) the analog binds specifically to B cells to which the immunogen binds specifically and (ii) the conjugate lacks a T cell epitope, comprising the steps of:

- (a) covalently bonding the analog of the immunogen to a nonimmunogenic polymer to form a conjugate;
- (b) separating the conjugate from the reaction mixture;
- and
- (c) combining the conjugate with a pharmaceutically acceptable vehicle.